

## REMARKS/ARGUMENTS

This Amendment is submitted in response to the first Official Action of March 20, 2007. Reconsideration and allowance of claims 4 and 6-12, as presently amended, remaining in the application are respectfully requested.

Original claims 4, 5 and 9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Applicant-Admitted Prior Art. In view of a technical paper by Sprenger, et al., which is asserted to have been a printed publication as of August 19, 1998, this rejection is respectfully traversed.

Regarding claim 4, it is directed to an industrial robot for picking up and placing products in a three-dimensional space, and more particularly to a so-called "Delta" robot, the construction of which is set out in the preamble of claim 4 and which is written in the Jepson format.

The improvement offered by the present invention is to affix a sensing means to the base plate of the Delta robot capable of detecting either inclination or rotation of the base plate upon detachment of the detachable joint used to join the base plate to the arms of the Delta robot. The sensing means produces an electrical control signal in such an event, and the control signal is used to shut off the Delta robot's servo motors that drive its movable arms.

The Sprenger et al. publication is concerned with an XY stage capable of high precision positioning of tools and the like relative to a workpiece. In this paper, the authors criticize the use of a Delta robot and, instead, propose using a plurality of voice-coil type actuators used to drive a slide in the XY plane. The apparatus described in the Sprenger et al. publication does not swing through a three-dimensional space or involve a base plate coupled to the lower ends of a plurality of arms by means of a detachable joint. Persons of ordinary skill in the art would not derive a solution to the problems occasioned by detachment of one of the arms from the base plate from a reading of the Sprenger et al. publication, which only involves translation in a two-dimensional space. There is nothing in the reference that would suggest the use of an angular rate sensor for detecting inclination of the slide. In Sprenger, the slide is not capable of becoming inclined.

As regards claim 7, the sensor system described in the Sprenger publication only produces a control signal when rotation of the slide gets out of prescribed bounds and is independent of the angular rate of rotation of the slide.

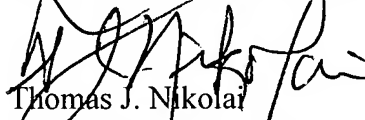
It is further submitted that the Foxlin U.S. Patent 5,645,077 constitutes non-analogous art. It purports to describe a system for tracking the angular orientation of a subject's head and has nothing to do with pick & place robots. Merely because it happens to include mention of an angular rate sensor as one of its components, persons skilled in the art relating to industrial robots would not be expected to look at the particular art involved with the Foxlin '077 patent. Moreover, there is nothing in the reference that would suggest use of an angular rate sensor as a way of detecting whether a base plate of a Delta robot is disconnected from one of its arm members.

In that claim 4, as amended, is believed to be in condition for allowance for the reasons advanced above, dependent claims 5-12 should also now be allowed.

The Examiner is respectfully urged to issue a Notice of Allowance of claims 4 and 6-12.

Respectfully submitted,

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**CERTIFICATE OF MAILING**



I hereby certify that the foregoing Amendment in response to the Official Action March 20, 2007, in application Serial No. 10/776,498, filed on February 10, 2004, of Gabriel F. Osten, and entitled "Robot End Effector Detachment Sensor" is being deposited with the U.S. Postal Service as First Class mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, postage prepaid, on June 14, 2007.

Date of Signature: June 14, 2007.

  
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